

Notice of Non-Compliant Amendment Mailed 1/4/2010

As noted in the Interview Summary (attached), the Notice of Non-Compliant Amendment Mailed 1/4/2010 was mailed in error. That Notice is vacated and withdrawn. Applicant need not – and preferably will not – respond to that Notice. The Office regrets any confusion the Notice may have caused.

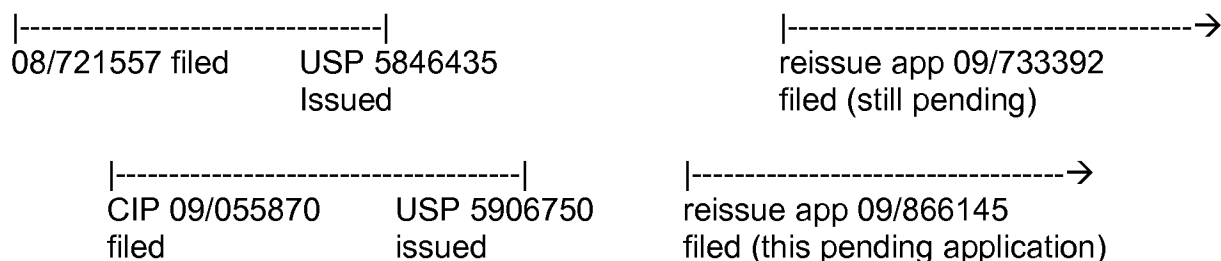
Effective Filing date of Applicant's Claims

Each of applicant's claims in this case recite *inter alia* use of ferric chloride, or a composition comprising ferric chloride or aluminum sulfate (claim 16). Insofar as parent application 08/721,557 filed 9/26/1996 does not support, i.e., does not provide an adequate written description of a method involving or formulation comprising either ferric chloride or aluminum sulfate, the effective filing date of applicant's claims in this reissue application correspond to that of the actual filing date of continuation-in-part application 09/055,870, i.e., April 6, 1998.

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Provisional Obviousness Type Double Patenting Rejection Over Application 09/733392

[In the chart below, time proceeds to the right (→)]



Pending 09/733392 claim	Pending 09/866145 claim
<p>1. A method for dewatering biological sludge from a thermophilic digestion process, comprising:</p> <p>a. adding a polymeric quaternary ammonium compound, as primary component, to the biological sludge; and</p> <p>b. adding to the biological sludge a cationic polyacrylamide or separate from the polymeric quaternary ammonium compound adding an anionic polyacrylamide;</p> <p>such that the polymeric quaternary ammonium compound and the polyacrylamide enhance dewatering of the sludge.</p>	<p>1. A method for dewatering thermophilic biological sludge, comprising:</p> <p>a. adding a primary component to the thermophilic biological sludge, the primary component comprising one of:</p> <p>aluminum sulfate,</p> <p>ferric chloride,</p> <p>aluminum sulfate and a polymeric quaternary ammonium compound,</p> <p>ferric chloride and a polymeric quaternary ammonium compound, and</p> <p>aluminum sulfate, ferric chloride and a polymeric quaternary ammonium compound; and</p> <p>b. adding a cationic or anionic polyacrylamide to the thermophilic biological sludge.</p>

Claims 1 – 13, 15 – 20, 39 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 09/733392 in view of USP 6660164 to Stover.

Claim 1 of the 09/733392 application covers a method for dewatering thermophilic biological sludge, comprising: a. adding a polymeric quaternary ammonium compound as primary component to the thermophilic biological sludge, and adding a cationic polyacrylamide to the thermophilic biological sludge. Claim 1 of the 09/733392 application does not require that ferric chloride also be added to the sludge.

USP 6660164 to Stover describes adding ferric chloride 146, 22, 28 (col 8 line 36) to an autothermal aerobic thermophilic digestion process 10 before the thermophilic sludge 138 is dewatered (col 10 line 50) to provide micronutrients, to control odor, and for sulfide complexation and precipitation of sulfide.

It would have been obvious to have added ferric chloride to Haase '435's thermophilic biological sludge prior to dewatering in order to provide a source of micronutrients, to control odor, and/or to complex with and precipitate sulfides, as taught by Stover.

This is a provisional obviousness-type double patenting rejection because the 09733392 application has not yet issued as a reissue patent of USP 5846435..

Claims 1 – 13, 15-20, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over USP 5954964<sup>1</sup> to Nielsen in view of USP 6660164<sup>2</sup> to Stover and USP 5861100 to Nagasaki.

Nielsen's claim 8 describes a method for digesting and dewatering sludge in a wastewater treatment process, comprising the steps of:

- a) directing wastewater influent through an activated sludge treatment process and producing waste activated sludge;
- b) directing the waste activated sludge through an autothermal thermophilic aerobic digestion (ATAD) process and producing biosolids; and
- c) mixing a low molecular weight polymer and a high molecular weight polymer with the biosolids and subjecting the mixture of low molecular weight polymer, high molecular weight polymer, and biosolids to a dewatering process for removing water from the biosolids and producing a dewatered treated sludge, wherein at least one of the polymers is a polyacrylamide polymer.

Among the "low molecular weight" polymers disclosed by Nielsen is Percol 406, which USP 5069831 to Schwab states is a poly(diallyldimethylammonium chloride) having a molecular weight of  $1.5 \times 10^6$  and a 50% charge density. Nielsen does not describe adding ferric chloride to the thermophilic biological sludge.

USP 6660164 to Stover describes adding ferric chloride 146, 22, 28 (col 8 line 36) to an autothermal aerobic thermophilic digestion process 10 before the thermophilic sludge 138 is dewatered (col 10 line 50) to provide micronutrients, to control odor, and for sulfide complexation and precipitation of sulfide.

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<sup>1</sup> Nielsen was filed July 29, 1997, which predates applicant's effective filing date of April 6, 1998.

<sup>2</sup> Claiming priority to provisional application 60/071943 filed Jan. 20, 1998, which predates applicant's effective filing date of April 6, 1998.

As shown by USP 5861100 to Nagasaki, ferric chloride and aluminum sulfate (aka, "alum") are known equivalents for use as primary components useful in generating small flocs subsequently flocculated into larger flocs using a polymeric flocculent.

It would have been obvious to have added ferric chloride to Nielsen's thermophilic digester sludge prior to dewatering in order to provide a source of micronutrients, to control odor, and/or to complex with and precipitate sulfides, as taught by Stover.

None of applicant's claims 2, 3, 5, and 6 requires that the primary component recited in claim 1 be a polymeric quaternary ammonium compound. Applicant's claim 7 does not require that the primary component recited in claim 1 be aluminum sulfate.

Per claim 4, Nielsen describes adding the ferric chloride directly to the thermophilic sludge.

Per claim 8, the relative proportion of chemicals in a formulation is a known result-effective variable, so optimization of the ratio thereof would have been obvious.

Per claim 9, the polymer dosage to solids ratio is a known result-effective variable (see Nielsen top column 7, for example), so optimization of the same would have been obvious.

Per claim 16, Nagasaki suggests substitution of alum for ferric chloride as a primary component.

Claims 1 – 13, 15-20, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Nielsen in view of Field.

US 5954964 to Nielsen describes dewatering a thermophilic sludge with a low MW polymer and a high MW polymer, but does not describe using an inorganic coagulant like aluminum sulfate or ferric chloride in place of, or in addition to, the low MW polymer.

USP 4043910 to Field facilitates the removal of phosphates from wastewater using both an inorganic coagulant, e.g., ferric chloride, and a cationic polyelectrolyte, e.g., polyacrylamide.

It would have been obvious to have used ferric chloride in combination with either Haase's or Nielsen's low molecular weight polyacrylamide in order to improve removal of phosphorus from Haase's sludge, as suggested by Field.

With respect to the numeric ranges or property values recited in the claims but not specifically addressed in the rejection above, the claimed limitations would have been obvious in view of the recognition in the art that the property, parameter, or limitation is a known result-effective parameter, the optimization of which would have been obvious with no more than routine experimentation.

#### Response to Arguments

Applicant argues that the invention as a whole would not have been obvious to a person having ordinary skill in the art because – in applicant's view – certain other references of record, e.g., Dentel, "teach away" from the claimed invention.

This argument has been carefully considered in addition to the evidence of obviousness found in the applied references, i.e., Haase 435, Stover, Nielsen, and Field. When all of the evidence of record – including the alleged teaching away of Dentel and others – was carefully considered as if all such evidence were posted on the walls of the metaphorical workshop of the hypothetical person having ordinary skill in the art at the time the invention was made, the conclusion of the examiner is that the claimed subject matter taken as a whole would have been obvious to such person. The examiner refers the applicant to *In re Gurley*, 27 F.3d 551, 31 USPQ2d 1130 (Fed. Cir. 1994). In that case, the applicant argued that a reference that ‘teaches away’ can not serve to create a prima facie case of obviousness. The court agreed that this is a useful general rule, but stressed that such a rule can not be adopted in the abstract, for it may not be applicable in all factual circumstances. Further, the court noted, although a reference that teaches away is a significant factor to be considered in determining unobviousness, the nature of the teaching is highly relevant, and must be weighed in substance. After weighing the evidence of nonobviousness presented by Dentel and other references cited by applicant against those of Stover, Haase 435, Nielsen, and Field, the examiner concludes that applicant’s invention is not patentable under Sec 103.

/Chester T. Barry/  
Primary Examiner, Art Unit 1797  
571-272-1152